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GMA okays P2B R&D fund

The future seems bright for the agriculture and fisheries sector as President Gloria Macapagal Arroyo approved a P2-billion yearly budget effective 2001 for research and development. This developed after the President met with Department of Agriculture (DA) Secretary Leonardo Montemayor, BAR Director Eliseo Ponce, and other key officials of the DA and its attached agencies/bureaus in a closed-door budget dialogue and presentation last July. The fund is expected to speed up the implementation of the Agriculture and Fisheries Modernization Act (AFMA) and jumpstart the programs lined up for the farmers and fisherfolk.

The P2-billion budget will be divided among the Philippine Council for Agriculture and Natural Resources Research and Development (PCARRD) with P225.49 million; Commission on Higher Education (CHED), P90 million; and BAR, P380 million. The remaining balance of P1.3 million shall be released only after the agencies have spent their allocated budget in implementing their programs, and shall be sourced out through the Agri-Agra law, which mandates that banks must allocate a budget percentage for agriculture.

Inset: President Gloria Macapagal-Arroyo
Background: Information technology development in the NaRDSAF will be one of the major priorities in R&D development.

The budget shall cover the implementation of R&D activities both at the national and regional levels. At the national level, P700 million will be allocated to implement the national R&D programs for commodity and non-commodity networks, and operation of the National Laboratory Services.

See GMA OKs, page 3

USM recommends high-yielding rubber clones

One of the country's centers for collection and propagation of rubber clones, the University of Southern Mindanao (USM) in Kabacan, North Cotabato, recently released a list of recommended clones of rubber.

The list comprises of the following clones: RRIM 600 (Rb 99-01), RRIM 712, RRIM 901, PB 217 (Rb 99-02), PB 235 (Rb 99-04). PB 260, USM 1 (Rb 99-03), PB 330, and PB 311. Among the new clones, USM 1 (Rb 99-03) has the highest dry rubber yield per year (2.5 tons/ha). PB 330 is also one of the highest yielding clones, recording an average annual yield of 2.38 tons/ha, closely followed by PB 260, producing 2.37 tons/ha per year.

Rubber clones are products of a normal plant breeding technique called clonal propagation. This technique involves screening and cloning rubber seedlings with favorable traits. These will then be monitored for performance that could take decades. Finally, the best trees will be identified and recommended for propagation and planting. Unselected seedlings yield around 400 kg/ha/year whereas modern clones, produced by generations of breeding cycles, can give commercial yields well over 2000 kg/ha/year. (International Rubber Research and Development Board)

Dry rubber production in the country is estimated to average 77,000 tons per year. This rate of production gradually increased from a meager yield of less than 0.5 tons/ha in the 1960s through the adoption of appropriate cultural management practices and use of high-yielding clones. Still, the annual consumption of rubber, at 133,000 tons/ha, exceeds its rate of production. Moreover, according to the Philippine Rubber Industry Master Plan, annual consumption is expected to increase to 170,000 tons from 2001 to 2005. Rubber growers will need to increase productivity to meet the industry's growing demands. The RDE Plantation Crops Network aids in developing strategies that will develop the plantation crop industry into a sustainable and globally competitive venture.

USM is one of the institutional members of the National Research, Development,

See USM, page 5

New sciences to produce more food

by: Thea Kristina M. Pabuayon

Current farming practices are no longer enough to satisfy the food needs of the Filipino. Government must take seriously its bid to modernize the agriculture sector, shifting from being a resource-based to a technology-based venture. The Department of Agriculture (DA) has the important task, therefore, to continually generate and use modern technology and new sciences to provide enough food for the poor and hungry Filipinos everyday. With this recognition, the Bureau of Agricultural Research (BAR) under DA has highlighted the importance of generating new technologies and using new sciences to end the problem of hunger in the country.

In celebrating the 3rd National Agriculture and Fisheries R&D Week on 2-6 October 2001, BAR shall focus on the theme "New Science for Food Security and Poverty Alleviation." Members of the National Research and Development System for Agriculture and Fisheries (NaRDSAF) and key players from the agriculture and fishery sectors will convene in this event to celebrate and evaluate the accomplishments of R&D in the country, with emphasis on new sciences and technologies.

This year's celebration of the R&D Week will be held at the Bureau of Soils and Water Management Compound in Diliman, Quezon City and will feature four events, namely: the Farmers' and Fisherfolk's Day; International Agriculture Day, 13th National Research Symposium, and the 14th BAR Anniversary.

The R&D Week will kick off with the Farmers' and

See New Sciences, backpage

Five cacao clones now ready for farmer use

Determined to provide good quality of produce and at the same time augment the income of smallholder cacao farmers, the University of Southern Mindanao (USM) recently introduced five cacao clones that are ready for adoption. The cacao clones were identified out of the 89 varieties that underwent several field evaluations and trials. Leading the field evaluations and trials were Dr. Romulo Cena and Mr. Ruben Cabangbang of the National Plantation Crops Network, USM, Kabacan, Cotabato.

The five cacao (*Theobroma cacao* L.) clones are: ICS 40, UIT 1, BR 25, K1, and K2.

The ICS 40 has an elliptical leaf shape and wavy leaf margin measuring 30 cm long and, 10 cm wide. This variety starts to flower after 18 months and bears fruits after 20 months. Its pod is characterized by an elongated, cylindrical fruit with pointed, rough surface, and bottleneck end point. It measures about 16 cm long, 10 cm wide. The pod is usually green when young and

See Five Cacao, page 3

NIRDEAP for Rubber: Stretching opportunities for rubber industry

by: Thea Kristina M. Pabuayon

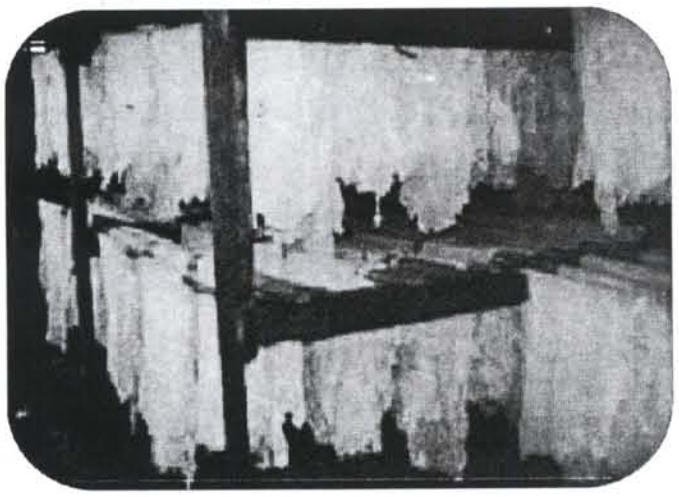
The Philippines has abundant natural resources but has been left behind by Malaysia, Thailand, and Indonesia in terms of its agricultural development. One of the main reasons for this is the country's apparent neglect of industrial crops like rubber.

Every year, the world rubber markets, particularly in USA, Europe, Japan, Australia, Korea, Germany and China, utilize 16.81 million metric tons (MMT) of rubber – 10.11 MMT of synthetic rubber and 6.70 MMT of natural rubber. The Philippines' share of this production remains very low.

In 1998, Philippine raw rubber export was 58, 317 tons valued at US$ 58.95 million. Although these figures have risen from previous year, it remains low compared to the production of other Asian countries, which accounts for 80% of the world's rubber. If developed, the local rubber industry can provide excellent export opportunities for footware, tires, tubes, retreads, and non-tire and non-footwear rubber goods. Aside from perking-up the economy, rubber farming is also a lucrative source of livelihood, providing the average farmers an annual income of P37, 500/ha. By farming at least three hectares per year, the average rubber farmer can earn P112, 500, which is 41.78% higher than the gross income of families in the poverty line.

For 2001, the Bureau of Agricultural Research (BAR) released P1.69 million for the implementation of four projects under the National RDE Program for Rubber. For the next four years, BAR will release P4.76 million more to complete the projects' implementation.

At present, the rubber industry is inhibited by three major problems: low productivity, lack of socio-economic data and market information systems, and inadequate RDE support. The National Integrated RDE Agenda and Program (NIRDEAP) for rubber aims to increase the production and income of farmers and planters through enhanced farm productivity and profitability, specifically from P37, 500/ha/yr to P44, 000/ha/yr for the first five years and P60, 000 in 15 years, with 0.8 tons/ha/yr to 1.5 tons/ha/yr in the first five years and 20 tons/ha/yr in 15 years. Moreover, the NIRDEAP contains provisions for the development of good quality raw/processed products, well-trained rubber stakeholders, and a systematic database that will give farmers and foreign buyers' access to scientific information, database, and market information.



First-class latex sheets are air-dried for export (Photo from Nick Gonzaga, taken from hi website "The Rubber Tree" at http://home.att.net/~nigonz/index.htm)

In the next five years, the NIRDEAP will implement four major program areas, namely:

Varietal Improvement

Researchers will focus on developing five to ten high-yielding Latex Timber Clones (LTC). At present, researchers have already undertaken hybridization and clonal trial in rubber as well as collected 112 rubber clones, ten of which are recommended for widespread cultivation. In terms of research gaps, R&D institutions have yet to characterize its germplsm collection and use market-assisted selection for faster and more efficient release of new LTC rubber.

Socio-economics and Marketing

The National Rubber network has already submitted a bill to Congress for the creation of PhilRubber, an office that will focus on resolving key issues and problems plaguing the rubber industry. However, several concerns will still have to be resolved, including the updating of the socio-economic profile of the country's rubber farmers, assessment of the socio-economic impact of post-harvest rubber technologies, and the updating of data on market practices, cost and benefits from rubber, among others.

Farming System

Five years from now, the rubber network will have established, selected, and evaluated location-specific farming system under Philippine conditions. This will be done by undertaking on-farm demonstration of rubber-based farming systems, economic analysis of cover cropping, and related studies on alternate cover crops and main crop systems.

Crop Protection

This program area aims to identify and control major diseases and other maladies afflicting rubber. Past and current efforts in this field include the conduct of preliminary studies in controlling white rot disease in rubber, and survey and identification of certain rubber diseases, respectively.

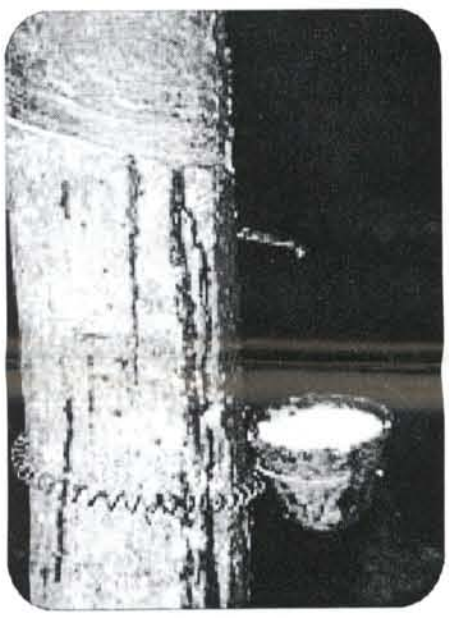
Rubber: the oozing tree

by: Rita T. dela Cruz

Imagine a tree that oozes with milky, white sap from its incised bark. This is the distinct feature of rubber (*Hevea brasiliensis*), a perennial tree crop and reforestation tree material that grows best in hot places and well-drained soils. The rubber tree is straight and slender, growing from 60 to 70 feet tall with smooth, light-colored bark, and shiny dark leaves. A versatile plantation crop used in the manufacture of about 50,000 items that people are using today, it promotes an environment-friendly farming system, suitable for Philippine soils and climatic conditions especially in Mindanao.

Rubber production

Rubber grows best at tropical places with temperatures ranging from 20-28°C and a well-distributed annual rainfall. It grows on almost all types of soil provided that the drainage is adequate. Mature rubber trees are usually 20-30 meters high, with graceful upwards-extending branches and a relatively slim trunk. These trees flower once a year and produce large fruits with thimble-sized seeds.



Depending on conditions, the rubber tree would usually take 5-10 years to reach 'maturity'. This is also the stage when tappers could start collecting the latex or the milky sap. At least once a year the leaves of the tree die and fall off, and new leaves are formed. During this stage, which often lasts for 16 weeks, the food processing of the tree and the constitution of its sap are substantially affected. The yield is also reduced, and this, together with other climatic factors, accounts for marked seasonal variations in the production of rubber.

When pasty yellow flowers start to fall from the branches, seed packets grow in their place. The pod contains three brownish speckled seeds about an inch long, at the same time, a liquid called latex, flows through the natural sideways tubes under the bark. Latex is the milky, white sap that oozes out after the bark of the rubber tree breaks from the pressure.

Tapping the tappers

Rubber plantations employ tappers who are responsible for collecting the latex from the trees.

See Oozing, page 3

Village processing technologies: Approach to solve low production of rubber

by: Rita T. dela Cruz

The Philippine rubber industry has a good chance in penetrating the world market but our rubber exports in 1998 showed that majority of the total rubber produced by small and medium scale farmers are mostly of low quality grade. Determined to solve this problem, the Philippine Rubber Research Center (PhilRubber), situated at the University of Southern Mindanao (USM), Kabacan Cotabato, conducted a study entitled, "Adoption of village level processing: An approach towards production of quality product and increased income." It has two main objectives: 1) to showcase, demonstrate and promote the adoption of village-level rubber processing technologies for the production of quality rubber product and increase farmer's income, and; 2) to prove that village-level processing facilities and equipment are worthy investment.

During the initial conduct of the study, it was found that the problem lies mainly on the two predicaments that the rubber industry is now facing: weak extension program and inadequate government support program.

Realizing this, the study introduced the adoption of village level processing technologies, an extension program approach that will solve the low level, low quality of productivity among farmers, specifically the small rubber farmers. This can be achieved by simultaneously producing quality and ready to use raw rubber, right at the farmers' own fields.

The methodologies and strategies of the implementation consisted of a two-part activity: fabrication and testing and, conduct of training on the adoption of the village level processing technology. A total of 10 units of USM-Rubber sheeter that were locally fabricated were installed in five project sites in Mindanao (Cotabato, Zamboanga, South Cotabato, Davao del Sur and, Bukidnon). Along with the equipment was a hands-on-training for 30 farmers on the village level processing technologies. These technologies include: latex (the white, milky sap oozing from the bark of the rubber tree) collection; straining, standardization and coagulation; milling and sheeting; drying; baling and; storage.

Results of the study showed an average cuplump (these are the dried latex left at the bottom of the tapping cups) production of 250 kg of rubber was procured whereby 30% of its actual price goes to the tapper (the person who collects or "taps" the latex from the rubber tree) while 70% goes to the owner. For the processed product, the farmer procured an average of 200 kg dry rubber wherein 40% of its current price goes to the tapper and 60% to the owner. Furthermore, farmers are able to avaii of the simple and low-cost processing technologies without the hassle of thinking of problems coming their way.

For more information about the potentials of rubber please contact the Dr. Eugenio A. Alcala, National team Leader for Plantation Crops RDE Network, Philippine Rubber Research Center, University of Southern Mindanao, #9407 Kabacan, Cotabato, Philippines or contact telephone numbers (064) 248-2323 or 248-2517 or e-mail at e_alcala@itdp.usm.edu.ph.

Smallholder rubber farming system: "No break" in farmers' income

by: Mary Charlotte O. Fresco

Rubber planters in the Philippines are predominantly smallholders. It is estimated that a farmer owns an average of 3 to 10 hectares of rubber farm. Unlike other crops, farmers consider rubber a potential crop that provides employment all year-round, since tapping the trees' latex or sap is done everyday. However, despite the viable and lucrative livelihood opportunities offered by rubber farming, there has been no substantial support given to smallholder farmers to generate high income during the years when rubber trees are too young to tap (ex. fourth to sixth year).

In response to these needs, the Philippine Rubber R&D Center (PhilRubber) in Kabacan, North Cotabato implemented a project on "Sustainable Rubber-based Farming System for Smallholders in the Philippines" to ensure a "no break" in farmers' income. The project involved the adoption of appropriate cropping systems and crop combination to come up with technologies for continuous source of income for the local rubber farmers.

This sustainable cropping system maximizes the use of land by simultaneously planting and raising some fruit trees, forest crops, cereals and upland rice, and selected livestock during the early years of rubber establishment. It also helps prevent soil erosion and nutrient loss in the soil since intercropping is applied.

Through this farming system, a single farmer can generate an additional average income ranging from P45, 000 to P80, 000 annually.

According to Dr. Gene Alcala, network leader of National Plantation Crops RDE, the most important consideration in adopting this farming system is the careful planning and designing of cropping system to adopt, the kind of crops and livestock to raise, and establishment of rubber as the dominant tree crop.

North Cotabato rubber trees (Photos from Nick Gonzaga, taken from his website, "The Rubber Tree" at http://home.att.net/~nigonz/index.htm)

"Not all rubber smallholders can adopt rubber-based farming technology except those who are full time and committed farmers engaged in rubber production," he added.

Also, in selecting the areas for rubber-based farming, one should carefully evaluate the conditions like water system; soils/terrain/topography, kinds and volume of planting materials, crop suitability, and market channels.

But how do we equip the farmers with adequate knowledge for him to run such a strategic business enterprise? A series of formal and informal training program on the basic operations of rubber-based farming especially crop-husbandry management; care and maintenance of rubber-based areas; financing support system; and marketing scheme is conducted for the farmer-operators. The farmers are familiarized with different types of crop-livestock combination and cropping pattern that could give them utmost benefits and returns.

The researcher concluded that cropping methods such as fertilizer application and tillage applied to food crops have positive effect on rubber growth. Leguminous crops intercropped with rubber significantly helped in the production of nitrogen in the soil.

With the full adoption of this kind of integrated cropping system sustained by continuous technical support from the government, the future of our smallholder rubber farmers will stay in top shape.

For more information please contact, Dr. Eugenio Alcala, PhilRubber, University of Southern Mindanao, Kabacan, Cotabato, at Tel. No. (064) 248-2323.

Oozing...

The tappers cut a narrow grove about four feet from the ground done at a slanted angle. At the bottom of the cut, a U-shaped metal spout that pours into a cup below it is attached. When the cup fills with the latex the tappers collect it. The tappers then pour the latex from the collecting cup into a tank and add an equal amount of water. The liquid is strained through a sieve to remove the dirt, twigs, and pieces of bark. Formic acid is added to strain the latex to make it form solid particles. Once the solid particles are formed the latex then becomes crude rubber. Crude rubber is sold to companies that make purified rubber then sell it to consumers.

Rubbing the potentials of rubber

Rubber opens a good avenue for the country to maximize its gain in trading arrangements given the universal pricing system and quality testing strategy under the General Agreement on Tariffs and Trade (GATT).

The production system of rubber is stable. According to the Philippine Rubber Research Center (PhilRubber) based in Kabacan, Cotabato, the yield per tree and the yield per hectare is comparable to Malaysia, which is the leading rubber producer. The current annual production supplies only 40% of the average annual domestic consumption. The volume decreases due to inadequate support for new planting and replanting programs.

According to the 1998 issue of the Food and Agriculture Centennial Book, the Philippine raw rubber exports in 1998 was 58, 317 tons amounting to about US$ 57 million. Seventy percent of the Philippine natural rubber (NR) goes to the tire industry while 30% of its production goes to the non-tire sectors such as gloves, medical wares, shoes, balls and others. The rubber industry is an export winner and a dollar earner. The present annual consumption is 5.1 million tons, 6.6 million tons in the year 2000, and 9.1 million tons in the year 2010.

The current world production is only 4.7 million tons. According to PhilRubber (2000), the future of NR producers is in a competitive position due to the escalation of oil prices that enhanced the utilization of NR relative to synthetic rubber.

Maximizing the full potential of the rubber industry through a comprehensive and fervent RDE program, the industry has a big chance of capturing a big share of the world market. Rubber is marketed as cuplumps (the dried latex) and sheets. Marketing is done through local and provincial assemblers, then to processors or traders. Domestic and foreign processors use international quality standards. There has been a slight price increase in the foreign market. Domestic prices have been increasing since early part of 1993 due to a limited supply and increase in demand and uses. *(Rita T. dela Cruz with reports from Rubber Developments, International Rubber Research and Development Board and, National Agribusness Corporation)*

For more information about the potentials of rubber please contact PhilRubber, University of Southern Mindanao, 9407 Kabacan, Cotabato, Philippines or contact telephone numbers (064) 248-2323 or 248-2517 or visit their website at http://www.usm.edu.ph.

Five cacao...

turns yellow when matured. Its canopy measures 195 cm and its bean is striped.

The UIT 1 has an elliptical leaf shape and wavy leaf margin measuring 22 cm long and, 8 cm wide. This variety starts to flower after 17 months and bears fruits after 23 months. Its pod shape is elongated and measures at about 20 cm long and 9 cm wide. The pod is usually green when young and turns yellow when matured. Its canopy measures 278 cm and its bean color is violet.

The BR 25 has an elliptical leaf shape and wavy leaf margin measuring 11 cm long and 4 cm wide. This variety starts to flower after 16 months and bears fruits after 18 months. Its pod shape is amelonado (ovoid shape) with semi-prominent point and measures at about 17 cm long, 7 cm wide. The pod is usually reddish when young and turns yellow-orange when matured. The K1 has an elliptical leaf shape and smooth leaf margin measuring 31 cm long and 13 cm wide. This variety starts to flower after 23 months and bears fruits after 25 months. Its pod shape is amelonado (ovoid shape) with semi-prominent point and measures at about 18 cm long and 9 cm wide. The pod is usually reddish when young and turns yellow-orange when matured. Its bean color is violet.

The K2 has an elliptical leaf shape and smooth leaf margin measuring 33 cm long and 13 cm wide. This variety starts to flower after 21 months and bears fruits after 24 months. Its pod shape is angoleta (oblique-shaped) with well-marked rough and pointed edges. The pod is usually reddish when young and turns orange when ripe. Its bean color is violet.

The five cloned varieties are all moderately resistant to known pests and diseases of cacao. The varieties have already been registered and are now available for adoption. *(Rita T. dela Cruz)*

For more information, please contact Dr. Romulo Cena of the National Plantation Crops Network, USM, Kabacan, Cotabato or contact him at telephone number (064) 248-2323.

GMA Oks...

To insure research excellence among R&D institutions, P450 million will be spent to upgrade national R&D facilities, including laboratories of DA agencies and state universities and colleges. Lastly, P225 million will be provided for human resource development, establishment of knowledge products and R&D information system, impact evaluation and policy, and program management. For the regional level, P625 million will be allocated to implement the regional programs, establish the Agriculture and Fisheries R&D Information System, and the Regional Knowledge Products and Services, as well as support to various institutional development projects. With this budget, the agriculture sector is expected to improve its overall performance, generate more jobs and raise the farmers' and fisherfolk's yield, productivity, and subsequently, income. *(Thea Kristina M. Pabuayon)*

NIRDEAP for Coffee: Perking up the coffee sector

by: Thea Kristina M. Pabuayon

With an annual world consumption rate of 100 million bags, coffee is visibly one of the most important commodities today. It ranks second to water as the most popular beverage and has an annual world production that is worth at least US$ 10 billion. In the next years, world demand is expected to have an annual increase of 1.7%.

In the Philippines, coffee production reached an all-time high of 61, 140 metric tons in 1992 and an all-time low of 37, 000 metric tons in 1998. The dismal performance of the local coffee industry was brought about by the dry spells caused by the El Niño phenomenon.

Like other businesses, the coffee industry is plagued with problems, namely: low production, low income of coffee farmers, poor quality of coffee beans, lack of postharvest facilities for quality processing, and the unstable market condition here and abroad.

With these conditions, the National Plantation Crop Sub-network for Coffee has drafted its own National Integrated RDE Agenda and Programs (NIRDEAP) to help improve the coffee industry. The NIRDEAP will be implemented for a five-year period and contains priority programs and projects for coffee. Each R&D member of the sub-network implements specific projects, thus preventing research repetition and resource wastage.

The NIRDEAP aims to develop the local coffee sector into an equitable, sustainable, environment-friendly, and globally-competitive industry. This is done by increasing the national production of quality coffee beans for local consumption and for the international market, and subsequently, increasing the income of coffee growers. The NIRDEAP is anchored on six research programs, namely:

- **Varietal Improvement**: germplasm collection, hybridization and multi-location trial of superior hybrid/clones of coffee, and biochemical/molecular characterization and analysis of genetic variation in coffee
- **Advanced Propagation**: rapid propagation of coffee through somatic embryogenesis
- **Nutrient Management**: assessment of leaf nutrient deficiency in coffee, development of low-cost soil analysis kit, identification of the critical nutrient requirement of coffee, and evaluation of organic fertilizers for coffee
- **Rejuvenation**: development of sustainable management strategies for rejuvenated coffee plantations
- **Socio-economics**: market analysis and technology assessment for coffee
- **Pest Management**: development of environment-friendly pest management strategies for Philippine coffee

With these research programs, the Coffee Sub-network expects to accomplish the following: have an available supply of of low-cost planting materials; make available rapid propagation technology to the Department of Agriculture regional field units; increase coffee production by as much as 10-20% through proper fertilization; reduce the expenses of coffee farmers by introducing new organic fertilizer; improve the yield of old and unpruned coffee plantations; disseminate information on latest coffee technologies and most profitable marketing practices; and increase yield by maintaining healthy coffee trees.

Profile...

(Café Puro), General Milling Company (Kaffee de Oro), and Universal Robina Corporation (Great Taste).

According to reports, world consumption of coffee continues to increase. Experts predict that the level of consumption will follow population growth. Moreover, domestic consumption also increases by 2.25% per year. This could be attributed to the proliferation of coffee specialty shops, catering to a wider and younger clientele. There is likewise a clamor to produce more of the arabica variety, mostly grown in Benguet Province.

Arabica is known for its elegant and complex flavor and is known to have higher quality than robusta, and has the potential to capture premium markets such as US, Germany, and Japan. However, arabica coffee production is hampered by the following factors: poor technical knowledge in growing coffee and lack of farm-to-market roads to transport harvested beans. Moreover, local industry leaders say Benguet arabica coffee production needs urgent support from the government for it to become competitive in the growing international specialty coffee market.

A national consultation with industry players revealed more factors that hamper the coffee industry's growth. These include low volume production and poor quality of coffee beans. The low yield was attributed to limited knowledge of farmers on appropriate production technologies such as fertilization, pruning technologies, cropping systems, post harvest handling, and primary processing. Old coffee trees also contribute to low productivity.

The National Sub-network Program on Coffee

In consultation with the industry players, this program addresses identified problems such as low volume of production, poor quality, unstable market conditions, and low income of coffee farmers per hectare. The R&D initiatives formulated include technology generation, improvement of coffee varieties for yield and quality competitiveness, development of farming systems, pest management, post harvest, utilization, and biotechnology.

Sources: The coffee sector, losing its perk, a paper by the foundation for Resource Linkage and Development, Inc., MARID, October 2000; International Coffee Organization, http://www.ico.org/statist/po2.htm; International Trade Data System, http://www.itds.treas.gov/CoffeeIndustry.html; Local coffee growers need to aim for specialty market, Michael Leonen, Businessworld, 15-16 December 2000; The Philippine National Program for Crops and Development, prepared by the National Plantation Crops RDE Network Operation and Management.

Clonal propagation in coffee: a promising technology

Coffee growers in the Philippines often encounter several problems in propagating their coffee seedlings. Majority of them have limited access to good planting materials due to scarcity and high cost. Because of these constraints, coffee farmers resort to conventional methods of propagating coffee seedlings through seeds and traditional vegetative cuttings. However, these methods of propagation have disadvantages. Coffee plants that are propagated using seeds may produce plants which are genetically different and may contain inferior traits. Moreover, propagation method that employs traditional vegetative cuttings can only be obtained from (orthotropic) upright branches. Approximately 8,000 plants can only be produced per annum using conventional methods of propagation. This production rate is insufficient to meet the increasing demand of the local coffee industry.

The recent advances in plant biotechnology offer solutions to these longstanding problems. The Coffee Research and Development Network based at the Cavite State University in Indang, Cavite (CaVSU) is currently undertaking researches on plant regenerations and cloning through axillary bud culture. Using these techniques, the plantlets are ensured to be "true-to-type" planting materials since the desirable characteristics of the mother plant are completely passed on to its progeny. This technique facilitates the selection of good cuttings at faster rate.

According to Dr. Alejandro Mojica, team leader of the coffee R&D network, mother clonal garden should be established first to ensure good quality of the planting materials. This is followed by the production of cuttings. Through bending of a healthy branch, numerous sprouts can be harvested after two to three months. The plantlets are then treated with fungicide and root hormone to hasten growth. These cloned plantlets are then reared and maintained in a propagation tunnel using sterilized rooting media to prevent disease infestation. After a few months, plantlets that develop extensive roots are harvested and transplanted to a black polyethylene bag with sterilized (sun-dried) soil. The seedlings can be planted in the field when at least six to eight pairs of leaves emerged.

Dr. Mojica's research group currently employs traditional means while they are still verifying the methods on plant regenerations and axillary bud culture.

In other countries, this macropropagation technique is widely applied to common varieties of coffee such as Excelsa and Liberica . Moreover, the National Seed Industry Council approved and recommended the adoption of clonal coffee seedlings from IC2 and IC4, high yielding cultvars of Robusta coffee.

Fore more information, please contact Dr. Alejandro Mojica, National Coffee RDE Network, Cavite State University, Indang, Cavite at Tel.no. (046)- 415-0020.

How to raise...

fertilizer, such as urea (46-0-0), is encouraged to achieve speedy growth.

Only seedlings with hardened leaves are planted out to the field. Field planting is ideal at the start of the rainy season, not during dry season unless irrigation is available in the field. The transplanting of the cacao seedlings from nursery to the field is a good start. Since the seedlings are healthy, with correct and constant care of the crop, the harvest is as healthy.

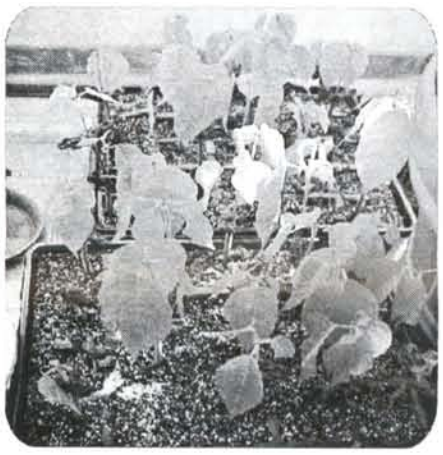
Source: Maintenance of Cacao under Nursery. Cacao RDE Sub-network. University of Southern Mindanao

For more information, contact Cacao RDE Sub-network University of Southern Mindanao Kabacan North Cotabato Tel. No. (062) 248 2323

How to raise healthy cacao seedlings

Raising cacao in nurseries is one way of raising healthy planting materials. Not only will cacao become pest-free, it will grow robustly. Like maintenance of a healthy body through proper diet and exercise, maintenance of cacao under nursery is through proper site and seed selection (stock and scion), and planting techniques.

The site of the nursery must be situated in an area near the source of water, with an excellent drainage system. A more ideal site is in a shaded area because cacao grows well in shades especially during its first two months. In the absence of coconut frond, black plastic nets attached on two-meter bamboo poles will do. Fortunately, cacao needs less and less shade as it grows prior to planting. Healthy plants grow from healthy seeds. Thus, only healthy and big seed varieties—the UIT1, UIT2, ICS 20 and UF42, of cacao are grown in nurseries. Unhealthy seedlings are removed as soon as detected.



As soon as cacao seeds mature or removed from the pods, it starts to germinate within one week. Thus, it should immediately be planted into the prepared polybags with sieved fertile topsoil. Some organic fertilizer is mixed in the medium to insure sound root and stem development of seedlings. If pH of the soil is low, ground magnesium limestone can be added to improve the pH to 5-6 level.

The size of the polybags depend on the length of time cacao will be kept in the nurseries-- the longer the time, the larger are the polybags. For instance, for seedlings kept from five to six months, a polybag measuring 12.5 cm x 15 cm with .003 thickness is an ideal size.

Systematic arrangement of the polybags inside the nursery leads to a more efficient maintenance and grafting of cacao plants as they mature. The arrangement can be in four rows with 50 cm spacing between each rows. After two months, seedlings should be lifted manually to avoid root penetration to the nursery soil.

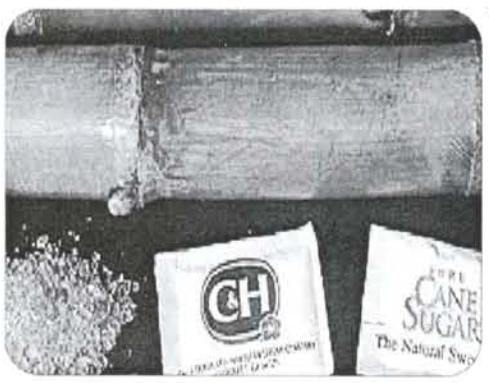
Aside from proper spacing, there should be constant weeding to prevent the weeds from competing with the growing seedlings in the absorption of soil nutrients. While it is tedious, weeding should be done manually because the use of herbicides is not advisable. However, occasional application of

See How to Raise, page 4

Earning more from canes

by: Junelyn S. de la Rosa

Almost every farmer depends on a bountiful harvest to have money for his and his family's other needs. In the case of the sugarcane farmer, aside from a big harvest or high tonnage-- he also wishes for a quality harvest---canes that have high sugar content that command higher prices in the market. Most sugarcane farmers would like to know when is the right time to harvest, to fertilize and how much fertilizers does he need to apply to the soil to ensure a good harvest for each cropping season. Three scientists from the Department of Soils and Plant Nutrition of the Sugar Regulatory Administration (SRA) tackled these questions with their study entitled: "Influence of varying levels of nitrogen, time of fertilization and age of harvest on growth and yield of sugarcane". Mesdames Rosario Bombio, Solena Tahum and Nimfa Navarro conducted two experiments at SRA, La Granja Agricultural Research and Extension Center (LGAREC), La Carlota City, Negros Occidental to know when is the right time to fertilize, to harvest and what is the best fertilizer rate for sugarcanes. The researchers found that farmers could get the most profit if they harvest the canes 12 months after planting (MAP). The economic analysis showed a high return of investment (ROI) at 252% when farmers harvested 12 months after planting and applied 200 kg of nitrogen per hectare.



Canes that were harvested at 12 MAP gave the highest average net profit of Php 81,719.86 with ROI of 243%. Harvesting at 12 MAP produced the highest sugar content compared to canes that were harvested at 9, 10 and 11 MAP with a difference of Php 19,738.64, Php 11,332.61 and Php 14,775.19 respectively.

For farmers who wish to harvest canes that have the highest sugar content—the scientists recommend harvesting the canes 10 months after planting. Confirming the studies done by Magnaye and Quilloy (1999), results of the chemical analysis showed that canes harvested 10 MAP have the highest sucrose content.

The scientists also said that knowing when is the right time to apply fertilizers is a must for every cane farmer to avoid unnecessary waste of resources. Applying fertilizers during planting and using the correct dosage produced the highest tonnage or the biggest harvest for the whole cropping

season. The highest net profit was Php 91,126.58 obtained from plots that were fertilized during planting and harvested 11 months after planting. This is equivalent to a return in investment of 257%.

For farmers to profit most from planting sugarcane, scientists recommend a fertilizer dosage of 100-200 kg N/ha during planting and harvesting the canes at 11-12 months after planting.

For particulars, contact Ms Rosario Bombio, Ms Solena Tahum, and Ms Ninfa Navarro of SRA-LGAREC at Tel No. 034-433-4952.

Coping with acidic soils

by: Junelyn de la Rosa

Since the early 80s, most farmers used lime as an all-around remedy for all kinds of acidic soils. However, recent studies indicate that too much of lime could aggravate the poor condition of acidic soils. A study commissioned by the Philippine Sugar Research Institute Foundation Incorporated (PHILSURIN) confirmed the findings of the study and said that the liming rate set by the Sugar Regulatory Administration (SRA) increased the calcium content of the soil to 2000ppm and did not do much to neutralize acidic soils.

To evaluate the SRA liming rates that are still used by most farmers as a standard for very acidic soils, Mr. George Malam from the Sugar Regulatory Administration-La Granja Agricultural Research and Extension Center (SRA-LGAREC) and Dr. Wilfrido Cosico of the Soil Science Department of the University of the Philippines at Los Baños (UPLB) conducted an experiment on very acidic soils that are grown to sugarcane.

Entitled, "Field evaluation of the SRA lime recommendation for sugarcane (*Saccharum officinarum*), the researchers studied the effect of lime on the growth and yield of sugarcane and its effects on soil acidity and the availability of other essential nutrients in the soil such as aluminum, iron, manganese, nitrogen, phosphorus, and potassium.

Results showed that 6 tons/ha calcitic lime favored the growth of sugarcane (Phil8839). This liming rate produced the tallest plants with the second highest number of tillers and the longest cane stalks six months after planting. The scientists explained that 6 tons per hectare of calcitic lime could have been sufficient enough to reduce or minimize the inhibitory effect of aluminum injury on the growth of sugarcanes on very acidic soils.

However, over-liming is not good for the growth of sugarcane. Increasing the lime rate to 9 or 12 tons/ha calcitic lime decreased plant height, number of tillers, stalk length and diameter at harvest. This is consistent to the research findings of Miller (1995) which stated that excess lime is often detrimental to plant growth. He said that this could be due to the reduced solubility of boron, zinc and other micronutrients that are needed by the plants. Similarly, the higher the amount of lime is added to the soil, the bigger is the corresponding increase in soil pH. Higher liming rate also reduced exchangeable manganese and aluminum. This could be avoided by following specific recommendations depending on soil and crop type. Excess lime not only affects the growth of the crop and the availability of the essential elements in the soil but alters the growth of beneficial microorganisms in the soil. Over-liming could destroy the nourishing capacity of the soil in the long run.

The researchers recommend that farmers apply 6 tons/ha of calcitic lime for very acidic soils that are planted to sugarcane. This validates SRA's liming recommendation that is widely used by sugarcane farmers in the countryside.

Also, farmers could gain from liming. Economic analysis showed that farmers could get an additional income of P10,576.42 as a result of the application of 3 tons/ha calcitic lime and P6, 527.92 for 6 tons/ha calcitic lime. While scientists agree that liming is necessary for very acidic soils (Manapla sandy clay loam) that are planted to sugarcane, they said that it is very important that farmers apply lime according to the results of a soil test. That is--too much lime can be as harmful as too little.

For particulars, contact: Mr. George L. Talam (SRA- SRA-LGAREC) and Dr. Wilfrido Cosico (Department of Soil Science, UPLB-CA, College, Laguna.

USM...

and Extension (RDE) Network on Plantation Crops. The network advocates the use of high-yielding clones as one of the technology promotion and adoption thrusts of the Network. *(Laarni C. Anenias)*

Sources: Description and rubber yield of USM recommended clones of rubber provided by the Plantation Crops Network
International Rubber Research and Development Board, http://www.irrdb.org/agronomy/yield.htm
The Philippines recommends for rubber by the Philippine Council for Agriculture, Forestry, and Natural Resources.

For more information, please contact Dr. Eugenio Alcala, Network Team Leader on Plantation Crops, USM. Tel No. 064-248-2323.

Muscovado: the promise of the 'other sugar'

by: Maria Rowena Briones

Muscovado is not a surname or the kontrabida in a soap opera. It is the less popular version of the sugar that we know. It is brown and soft and comes in powder or lumped form like a sticky clay, or in syrup form like the more chichi honey.

Muscovado has thrived as a backyard industry dating back to the Spanish era. Instead of a gigantic sugar mill, a 12" x 24" two-roller cast-iron mill made of cogs, gears and belt and driven by a motorized engine extracts juice from sugar canes. It takes about 40 minutes to yield enough cane juice to fill the vat, the locally known *kawas*, where it is cooked for three to four hours until it becomes sticky. Cooking is the critical phase in muscovado processing that's why the furnace, using only bagasse (a milling by-product), is designed to emit heat gradually. To hasten the hardening process and allow impurity coagulation, a minimal amount of lime is added.

The curing process depends on the desired type of muscovado. For powder form, the concentrated juice is transferred to rectangular curing tubs where they are vigorously mixed until they solidify into lumps. These lumps are then powdered based on the desired consistency and color and stored in sacks or bags . For the molded product type, the juice is just transferred to a mold, usually coconut shells, for the liquid to solidify.

With only a minimal capital and labor input with just the backyard as the 'plant', the muscovado is now ready for the market.

Muscovado products sold by foreign countries

Some producers have regular buyers while the rest settle for the erratic market.

Although an integral part of the sugar industry, muscovado is overshadowed by domestic milled sugar production. In fact, in places where there are sugar mills, there is minimal muscovado production. Furthermore, there is little technical and financial support for muscovado producers unlike those of the sugar crop growers who receive much attention and assistance from the government .

Aside from the producers being left at the mercy of traders who seldom give them fair market price, muscovado production technology has a lot of shortcomings. The juice is not fully extracted from sugarcanes and a large percentage of these juices are lost in the process. The juice extracted is not spared from contamination and sediment making the muscovado not acceptable for export

Despite these constraints and the presence of refined and imported sugar in our local market scene, muscovado remains a surviving, if not a thriving industry. It is used in making grated coconut candies, peanut brittle, banana chips, pili nut candies, bar breadfruit candies, and coconut honey. Muscovado has penetrated posh hotels and restaurants as unconventional and delectable coffee sweetener. Health conscious consumers also seek this especially now that being healthy has become an obsession. Going organic and natural has also become a fad, if not a priority.

The Industrial Research and Development Office of the Sugar Regulatory Administration suggests an externally walled, roofed and enlarged muscovado plant and a regular upgrading of the juice extractor especially the engine that powers it for a more speedy extraction. Installation of screens along the juice canal to the cooking vats or storage tanks will help eliminate extraneous matters in the juice. The transfer of juice can be made efficient by a two-hp motor driven water pump. This would require an additional capital estimated to four times the required capital in the conventional muscovado production. For an industry that seemingly offers little to be desired, this additional capital is well worth the risk. Muscovado production holds a lot of promise since the processing cost is minimal, relative to milled-sugar production, leading to a higher gross profit. This is the reward to a muscovado producer, for taking the road less traveled in sugar production■

Source: Latiza, Augusto ed. A Primer on Muscovado Production and Technology Industrial Projects Division Sugar Regulatory Administration.

For more information contact Angelina Lojo of Industrial Research and Development Office of the Sugar Regulatory Administration located at Philippine Sugar Center, Annex Bldg. North Ave. Diliman Quezon City or call Tel. No. (02) 926-7227 or email at srairdo@nsclub.net.

Rock candy: A 'tasteful' example of a profitable home business

by: Mary charlotte O. Fresco

Many of us may not have heard of rock candy. A luscious crystallized sugar on stick which offers a wide range of opportunities to become a profitable home business.

Rock candy production is believed to have originated in China for the preparation of gift and souvenir during special occasions such as wedding and holidays. In the United States, rock candy is used as coffee and tea sweeteners.

Rock candy differs from other sugar-based confectionaries in the sense that it is crystalline and composed mainly of pure sucrose from sugarcane, which makes it beneficial to human health.

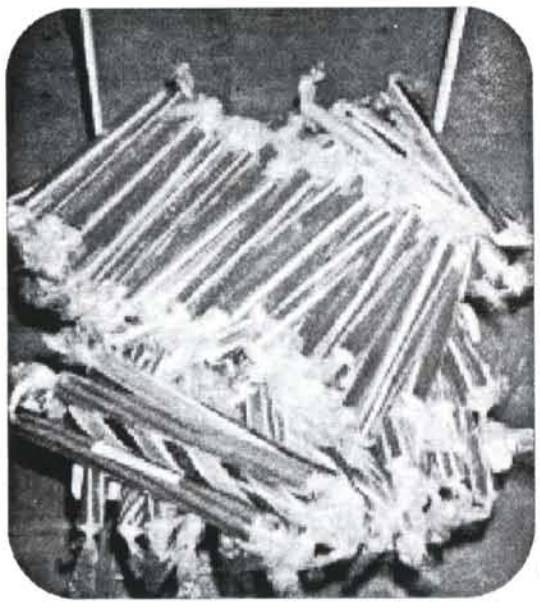
In the Philippines, the Sugar Regulatory Administration (SRA) has tested and evaluated the method of producing rock candy through a simple process that requires small capital and readily available equipment and materials.

Here is a simple method developed by SRA in making rock candy.

1. Dissolve 250 grams of white sugar per 100 ml of potable water to form a heavy syrup or sugar solution.

2. Transfer the solution into an aluminium or ice cream can.

3. Heat the solution to a temperature not exceeding 110^0 until sugar is completely dissolved.



4. Crystallize the solution by placing it at room temperature for about 6 weeks.

5. Allow the syrup to cool to approximately $40\text{-}50^0$ before dipping the sticks sprinkled with sugar crystal.

6. Loosen the sticks every 2 to 3 days to prevent them from sticking to each other.

7. Put food color and flavor to some while others may be allowed to crystallize at their own natural color and flavor.

8. When the crystal grows to approximately 5-10 mm, dry the product by air or oven.

Ideal rock candy weighs one gram (for candy purposes) and 15 grams for tea or coffee sweetening. One may experiment to come up with several flavors such as mint, strawberry and orange.

Based on the results of the test conducted by SRA, white or refined sugar produced twice more rock candies compared to brown sugar for the same crystallization process (time and condition).

The cost and benefit analysis made by SRA showed that a net income of P3,100 could be generated for every 800 sticks of candies using 25 kilos of refined/white sugar. This technology is being promoted as a micro business venture and livelihood opportunities for the low-income group in the countryside.

For more information please contact, Ms. Nora I. Chinjen, Sugar & Sugar By-products Utilization Department, Sugar Regulatory Administration, North Avenue, Quezon City at Tel. No. 926-7006.

Prospects...

But as a famous adage would say, we should never lose hope. According to the International Cocoa and Chocolate Organization (ICCO), the global demand for chocolate has started to increase. In the world market, the daily average prices have increased by more than 50 percent between December 2000 and February 2001. ICCO had also projected a two- percent increase in consumption in the coming year. This offers a tremendous opportunity for our cocoa industry as ICCO had also projected a gap of 205,000 tons in terms of supply.

Presently, we have 13 cocoa and chocolate enterprises in the country. Three of them are large companies. Most of these enterprises are located in Manila with an aggregate capacity ranging from 20,000 to 36,000 metric tons of processed cocoa. With a comprehensive development program for the industry and assistance to cocoa farmers in accessing loans, we can bring the sweetness back in our local cocoa production. ■

Source: Cocoa Industry Situationer. National Agriculture and Fisheries Council. http//www.icco.org

For more information contact Ms. Josephine Ramos of the Industry Research Division, National Agriculture and Fisheries Council located at 4th flr. DA Building Elliptical Rd. Diliman Quezon City. Tel no. 926-2246

Propagating cacao by nodal grafting

by: Mary Charlotte O. Fresco

Cacao is a crop of great commercial value and has a competitive advantage both in the domestic and international markets. Cacao processed beans are used mainly by manufacturers of chocolates, cocoa powder, soaps, cosmetics, shampoo, and other pharmaceutical products.

Despite the bright future of this crop, the domestic production level of cacao has been decreasing, from 7.945 metric tons in 1994 to 7,000 metric tons in 1999. This can be attributed to some long-standing problems such as lack of superior varieties and inadequacy of technologies on pest management and postharvest handling and processing and the poor farming systems.

In an attempt to address this concern, the University of Southern Mindanao (USM) in Kabacan, North Cotabato tested and used nodal grafting technique to propagate cacao cultivars with superior characteristics (uniform and vigorous growth and free from diseases).

Nodal grafting involves the use of a scion (shoot) that is inserted in the node of mother stock to produce high quality planting materials.

The steps involved in nodal grafting are as follows:

1. Construct a nursery shade (mature bamboos for frame and coconut fronds for roof) 7-feet high. The shade should be about 50 *percent.*

2. Fill black polyethylene bags (5"x7") with garden soil. Perforate the bags (at least 10 holes) and arrange them in rows (4 bags/row with a 2 feet distance between rows). Use recommended rootstock varieties such as UIT1, UIT2, and 246A.

3. When at least a pair of leaves has emerged from the stock, water and place the rootstocks together in a 12"x16" white/transparent polyethylene bags. Increase the shade percentage of the nursery to 80 percent.

4. Get a scion of recommended varieties from accredited budwood gardens.

5. Cut the stock stem two inches above the node leaving a pair of leaves. Cut the middle of the stem to at least 1/2 inch deep. Cut the scion (with one node) diagonally into 3 inches long. Insert the scion stem in the rootstock. Make sure that stock and scion cambium are in good contact.

6. Use a .003 inch polyethylene strip to tighten the connection. Use paper clip or any materials that can hold the scion and stock together until callus are formed.

7. Place a stick in the middle of transparent polyethylene bag and tie it.

8. At the time the scion has produced new shoots, open the polyethylene bag partially.

9. After two weeks, remove the transparent polyethylene bag and arrange the seedlings following step 2.

10. Apply fertilizer (urea) to the seedlings.

Ideally, grafted seedlings are planted before reaching four months.

For more information, please contact Dr. Ruben Cabangbang, National Plantation Crops Network Office, University of Southern Mindanao, Kabacan, North Cotabato, Tel.No. (064)248-2323.

Making vinegar a business venture

by: Junelyn S. de la Rosa

Vinegar has earned its niche in any Filipino kitchen. Almost all mouth-watering dishes need a teaspoonful or two of vinegar. It is even an ingredient for some cakes, souffles' and native delicacies. It is not surprising that the simple vinegar has assumed a variety of forms in seasonings, dressings, marinades, sauces and gravies. Vinegars with suitable oils, herbs, and spices are a chef's well-kept secret to a gourmet feast. Moreover, vinegar can be more than an addition to any dish---it can be a source of income---a promising business venture for any Filipino who is interested in making more money at home.

The Sugar Regulatory Administration (SRA) has packaged a fast, easy-to-follow and cost effective technology on making vinegar. This technology produces naturally fermented sugarcane vinegar from sugarcane juice in just two weeks.

Materials

Making vinegar provides an avenue for utilizing over-ripe fruits, sugarcane rejects, ethyl alcohol rejects and cane by-products such as molasses, bagasse and tops.

In the Visayas, southern Tagalog areas and Central Luzon, the most common materials used for vinegar making are nipa palm sap, coconut palm sap, pineapple juice and sugared coconut water. However, in sugarcane areas where leftover canes rejected by mills abound, it is recommended that these materials be utilized.

Young canes may also be used for vinegar making. If the juice extracted is below 15-16 degrees brix, small amounts of sugar are added. Molasses or muscovado can be used instead of sugar.

How to make vinegar

1. Remove trash and wash canes.

2. Crush sugarcane stalks to extract juice. To increase recovery, make two or three passes. Collect juice in earthen jars.

3. Bring filtered juice to a boil or cover the earthen jars (w/juice) to high temperature. One day under the sun is enough to destroy contaminants.

4. Add one-half gram (1/4 of fresh cake) of yeast per liter of juice. Reactivate yeast by hydration before addition. Stir well. Use only wooden or bamboo spoons. Never use metallic spoons or containers.

5. Allow suspended soil particles and other extraneous materials to flow over for 2-3 days. Use narrow-mouthed jars during this period of fermentation.

6. You will observe that a clean amber-colored liquid will remain after suspended dirt is removed. Clean the jars' mouths with a damp cloth. Cover jars with *katsa* or earthen jar cover. Air is not required at this stage of fermentation.

7. Let the liquid stand for another five days. Alcoholic fermentation is a fast process, it is almost complete after 3-4 days.

8. Test alcoholic fermentation with a hydrometer. If Brix is zero, proceed to acetic acid fermentation. If you have no hydrometer, just take note of the movement of gases in the liquid. Once there are less gases produced, proceed to the next step.

9. Transfer or siphon the liquid to wide-mouthed earthen jars. Do not include the yeast sediments. Mix four parts of the liquid with one part of good unpasteurized vinegar (mother liquor).

10. Stir thoroughly. Cover with a clean piece of cloth. Repeat mixing at least twice a day. Use only wooden/bamboo ladles. Do not fill the jars up to the brim. Leave some air space. At this stage, oxygen is required by the fermenting organisms.

11. Allow the liquid to ferment until acidity is strong enough (4-6 percent acetic acid). In one to two weeks, the vinegar is ready for bottling. Test liquid for acetic acid content in the laboratory for quality control.

12. Siphon into bottles and pasteurize at 60-70°C for 20 minutes, to arrest further fermentation. Label.

13. Retain 1/5 of the fermented vinegar in the wide-mouthed jars for the second batch.

14. Continue with the procedure a long as there are no contaminants. As soon as abnormal smell or growth of other organisms is observed, clean the jars very thoroughly and use another batch of mother liquor. If there are only a few contaminants, boil the fermented liquid and test it if it can be pasteurized and used as vinegar.

Source: Vinegar production from canes, SRA

New Sciences...

midstream/downstream social sciences. Entries will compete for the AFMA Research Paper Award-Published Category, which includes the BAR Director's Award and the DA Secretary's Award; and the AFMA Best Research Paper Award-Unpublished Category.

This year, DA Secretary Montemayor shall serve as keynote speaker and guest of honor.

Finally, the 14th BAR Anniversary will be held on October 5. This event will be highlighted by the presentation of awards for this year's NRS winners which include a cash prize and certificate of recognition for the winners of the AFMA Research Paper Award, additional cash prize and certificate of recognition for the AFMA Best Research Paper Award for each sub-category, cash prize and plaque of recognition for the AFMA Outstanding Research Paper (Unpublished Category) Award, cash prize and certificate of recognition for the BAR Director's Award, and cash prize and plaque of recognition for the DA Secretary's Award.

National Plantation Crops RDE Network

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The Philippine coffee industry: a profile

by: Laarni C. Anenias

Coffee drinking is said to have originated in Kaffa, a province in Ethiopia. The Ehiopians were the first to discover the beverage in the beans of a tropical evergreen tree of the genus Coffea. They grounded and roasted these coffee beans, then poured boiling water on it. People in Yemen, Arabia, and Egypt soon learned of this discovery, until coffee drinking spread in many areas in the West, and became part of the everyday lives of people for around 300 years now.

In our country, no morning is complete without coffee. We have our own *Batangas barako* to be proud of. Instant coffee then came into the scene, and lately, gourmet and specialty coffee with the introduction of foreign cafés such as Starbucks, Seattle's Best, and the like. Coffee drinking has now become more than just a way to wake up one's nerves, it has become a trend.

The market situation

Coffee ranks second only to oil among the world's legally traded commodities. Around the world, there are an estimated 25 million coffee growers, who are mostly small-scale farmers. The country has two most popular varieties of coffee: *Coffea arabica*, otherwise known as arabica, and *Coffea canephora, or robusta*. According to statistics from the International Coffee Organization, robusta accounts for 75% of the country's total production and arabica, 5-10%. Other varieties such as excelsa and liberica, likewise thrive in the country and accounts for 15-20% of the country's coffee produce. Interestingly, the country is one of the few countries in the world where all these four coffee varieties exist. It is estimated that around 300,000 Filipinos depend on the coffee industry. The national average yield is 400 kg/ha, a very low production compared to leading coffee producing countries such as Brazil where production is at 2,000 kg/ha. Average coffee production is at 485 kg/ha of green beans. This, according to experts, is much lower than the ideal production of 1,500 kg/ha. While most of the coffee farms are situated in Mindanao, the most productive area is in Cavite,

in terms of volume and quality, averaging 840 kg/ha, according to statistics from Nestle Philippines. However, from 1987 to 1996, the total hectarage planted to coffee decreased, from 149,657 hectares to 138,830 or an average of 1% reduction per year. To date, the country produces 739,000 bags of coffee, with total export of 4,999 bags. The country exports coffee in various forms: green beans, roasted ground coffee, and soluble or instant coffee. Nestle Philippines Inc., maker of Nescafe products, reportedly supplies 85% of the instant/soluble coffee in the market. The remaining 15% is shared by Commonwealth Foods

See Profile, page 4

Prospects in Cocoa

by: Maria Rowena Briones

The Philippines is not one of the main cocoa producers in the world but we have families that derive income from cocoa farming and manufacturers that process the raw cocoa beans for use in other industries. Although cocoa in the past experienced a slowdown in the global market, the industry is starting to pick up again, as there is an increase in demand for cocoa. A revitalized cocoa industry would mean grabbing this opportunity. We maybe a small player in the global market for cocoa but we can optimize what our cocoa industry could offer. Cocoa in the Philippines is grown in less than three hectares of land by small holder farmers. Aside from a source of additional income for farmers as this can be planted along with other crops, cocoa farming also provide employment in the rural areas. Cocoa beans, once fermented and dried, can be stored for several months. Thus, storage is not a problem.

Cocoa beans are processed into cocoa butter or cocoa liquor. These are used in the manufacture of chocolate products, cosmetics, pharmaceutical products, and other industrial applications. The husks and skins, by- products during the grinding process, are used as soil enhancer and mulching material for gardening.

Despite the many uses of cocoa, the prospects in cocoa production are not as sweet unless we do something to improve it. As the whole cocoa industry in the country attest, it is not as promising as before. World prices for cocoa have plummeted from US$ 4000 per metric ton in 1979 to just US$ 880 per metric ton in 2000 along with increase in prices and limited availability of production inputs. Furthermore, loan facilities and support structure for cocoa farmers and R&D efforts to address problems caused by pests and diseases are very few.

The unprecedented decrease in cocoa prices made cocoa farmers shift to other more profitable commodities. This resulted to less domestic supply of cocoa beans. Trade liberalization even exacerbated this problem through lower tariffs for imported cocoa powder. Under Executive Order No. 254 signed in June 2000, tariff was placed at 3 percent making imported cocoa powder cheaper than the local ones thus capturing a larger market share. We lose at least $14 million annually because of this.
There is less cocoa grinding and manufacturing operations taking place. As if this is not enough, starting late in the1990s, our export of cocoa butter decreased by 11 percent annually and we have exported only a small volume of cocoa beans from 1997 to 2000. This calls attention to our dire need for sound, consistent implementation of economic policies to uphold and protect our local industries and promote the production of our own raw materials.

See Prospects, page 6

New Sciences...

Fisherfolk's Day on October 3. Highlighting this day is the "Ulat sa Bayan" program of the Commodity Network Team Leaders (NTLs) of rice, corn, fruits, vegetables, fisheries, coconut, and rootcrops. The NTLs will be making a comprehensive review of the industry, its opportunities, and the technologies generated for the past years. Manny Villar, Senate Committee Chair on Agriculture, will be the guest of honor. On the third day of the R&D Week, October 4, Senator Edgardo Angara will address delegates from international agricultural institutions as the keynote speaker and guest of honor to the International Agriculture Day. This event will feature an exhibit of international agricultural research centers (IARCs), a symposium on the new science and tools used by IARCs in addressing food security and poverty issues, and a meeting among scientists of the various research institutions. Participating IARCs will include the International Maize and Wheat Improvement Center (CIMMYT), International Center for Living Aquatic Resources Management (ICLARM), International Livestock Resources Institute (ILRI), International Potato Center (CIP), Asian Vegetable Research and Development Center (AVRDC), International Crops Research Institute for the Semi-arid Tropics (ICRISAT), International Plant Genetic Resources Institute (IPGRI), International Network for the Improvement of Banana and Plantain (INIBAP), and International Rice Research Institute (IRRI).

To give recognition to the accomplishments of the agriculture and fisheries researchers in the NaRDSAF, BAR will hold the 13th NRS on October 5. The NRS is held annually to promote research excellence and effectiveness in managing the national agriculture R&D system. Farmer organizations, state colleges and universities, and national and regional research institutions will be recognized for their notable accomplishments in the different categories of agricultural and fisheries technology research, namely: upstream biological sciences, upstream physical sciences, upstream social sciences, midstream/downstream biological sciences, midstream/downstream physical sciences, and

See New Sciences, page 7

BAR TODAY

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